

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 22 JUL 2005

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PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) **19.7.2005**

Applicant's or agent's file reference
S-16

FOR FURTHER ACTION

See paragraph 2 below

International application No.
PCT/JP2005/004393

International filing date (day/month/year)
08.03.2005

Priority date (day/month/year)
09.03.2004

International Patent Classification (IPC) or both national classification and IPC
Int.Cl.⁷ F28F1/02, B21D53/04

Applicant
SHOWA DENKO K.K.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Date of completion of this opinion

05.07.2005

Name and mailing address of the ISA/JP

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3M 3530

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/JP2005/004393

Box No. I Basis of the opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
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International application No.

PCT/JP2005/004393

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-26	YES
	Claims		NO
Inventive step (IS)	Claims		YES
	Claims	1-26	NO
Industrial applicability (IA)	Claims	1-26	YES
	Claims		NO

2. Citations and explanations

Document 1

JP 2003-053460A (SHOWA DENKO K.K.) 2003.02.26,
line 48, column 11, page 7 to line 44, column 13, page 8, Figs 1 to 3
& US 2004/0244196 A1 & EP 001420910 A1 & WO 2002/100567 A1 & TW 000557235
B & CZ 020040024 A

Document 2

JP 2000-193387A (SHOWA ALUMINUM Co., Ltd.) 2000.
07.14, lines 9-13, column 2, page 2, line 49, column 6, page 4 to line
11, column 7, page 5, lines 33-45, column 8, page 5, lines 16-24, column
10, page 6, Figs 1 to 3 (Family: none)

Document 3

JP 08-042985A (SHOWA ALUMINUM Co., Ltd.) 1996.
02.16, lines 23-47, column 6, page 4, Fig 12 (Family: none)

The subject matters of claim 1-2 do not appear to involve inventive steps in view of the document 1 cited in the ISR and the document 2 cited in the same. The technical feature [the reinforcing wall forming portions 14 and 15 of a flat tube 1] in D1 and the feature [the reinforcing wall forming portions 11 and the ridges 24, 24] in D2 are concerned with mutually related technical fields. A skilled person in the art would easily conceive the idea of employing the feature in D1 to substitute the feature disclosed in D2.

The subject matter of claim 3 does not involve an inventive step over D1, D2 and the document 3 cited in the ISR. The technical feature [each of the flat wall forming portions is provided with reinforcing walls forming portions arranged alternately] is disclosed in D3 (see Fig. 12).

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of: V

The subject matters of claim 4-7 do not involve inventive steps over D1, D2. A skilled person would therefore regard it as a normal option to include the feature [the thickness of the reinforcing walls] in order to solve the problem.

The subject matter of claim 8 does not involve an inventive step over D1, D2. The technical feature [opposite side faces of the thin reinforcing wall forming portion are positioned inwardly of opposite side faces of the thick reinforcing wall forming portion] is disclosed in D2.

The subject matters of claim 9-12 do not involve inventive steps over D1, D2. The technical feature [a flat tube that the ridge 18 is formed on an end face of the thin reinforcing wall forming portion 14, and the groove 19 is formed in an end face of the thick reinforcing wall forming portion 15] is disclosed in D1.

The subject matters of claim 13, 15 and 18 do not involve inventive steps over D1, D2. The technical feature [a flat tube 1 fabricated according to claim 13, 15, 18] is disclosed in D1.

The subject matters of claim 14 and 16 do not involve inventive steps over D1, D2. A skilled person would therefore regard it as a normal option to include the feature [the fillet of the specified spot] in order to solve the problem.

The subject matter of claim 17 does not involve an inventive step over D1, D2. The technical feature [a heat exchanger comprising according to claim 17] is disclosed in D1.

The subject matters of claim 19-26 do not involve inventive steps over D1, D2. The technical feature [a condenser, an evaporator, etc. with a heat exchanger comprising a flat tube] is well-known (for example lines 9-13, column 2, page 2 in D2).